

BIBLIOGRAPHICAL NOTICE.

The Natural History of the Tineina. By H. T. STAINTON; assisted by Prof. ZELLER, J. W. DOUGLAS, and Prof. FREY. 8vo, Vols. IV. to VII. London, Van Voorst, 1859-1862.

As several years have elapsed since we announced the appearance of the first volume of this important entomological work, and described its general characters, it may perhaps not be amiss to refresh our readers' memories upon these points. Mr. Stainton's object in the 'Natural History of the Tineina' is not only to describe the insects of that group and to unravel their synonymy, neither of which are very easy tasks, but also to furnish a full account of their natural history. With this view the species of each genus are brought together as much as possible, in face of the difficulty of always ascertaining the entire history of the allied species; the appearance of each species in its different states, its habits, and mode of life are described in detail; the times of its making its appearance, both in the larval and in the perfect form, are indicated; its geographical distribution in this country and on the Continent is given; and, finally, its synonymy is fully discussed. In the general remarks on each genus of which the species are noticed, we find the structural characters of the insects in their different stages, followed by a general view of the habits of the species of the genus, their number and distribution. In each genus the author gives a list, often in a tabular form, of all the known species, together with a classified catalogue of the food-plants of all their known larvæ, appending to each plant the names of the species which feed upon it. The generic details are closed by a literary history of the genus, showing the gradual progress of our knowledge of the species and their habits. So much for the general plan of the work, which is executed with a degree of conscientious care and an evident striving after perfection such as are unfortunately rare in the productions of our English entomologists. Its value to the student of the Lepidoptera is greatly increased by the beautiful plates with which it is illustrated: each of these contains figures of the larvæ and perfect insects of three species, accompanied by representations of the leaves of the plants as eaten by the larvæ, and of the cases in which some of them dwell and undergo their transformations. The earlier plates were drawn and lithographed by the late Mr. W. Wing, whose early and lamented death deprived entomologists of one of their most talented artists; the subsequent illustrations have been drawn and engraved with equal accuracy and elegance by Mr. E. W. Robinson, and in the way of entomological figures they leave little or nothing to be desired.

There is one curious feature in the book, to which we adverted at some length on its first appearance, namely, that the text (which, we may observe, is given gratuitously, the work being published at the cost of the plates) is in four languages—English, French, German, and Latin. Without entering into the question whether the usefulness of such a book as this is increased by this multiplication of its

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tongues, we shall only remark that the present arrangement in four parallel columns on each two pages is decidedly inconvenient, and reiterate the hope, expressed by us in a former notice, that, on the commencement of the second series of ten volumes, Mr. Stainton will adopt the system of printing the part in each language separately. It is certainly an inconvenience in a work of reference to have only half a page of reading on two pages of print.

In his first three volumes Mr. Stainton treated exclusively of leaf-mining species—Moths whose caterpillars live between the two surfaces of leaves, eating the parenchyma and leaving channels or mines, the aspect of which on the surface of the leaf is often very characteristic of the species forming them. In the last-published volume we have mining species again, some belonging to the genus *Nepticula*, already treated of in the first volume, and others to the smaller genus *Bucculatrix*, of which more than half the species are here illustrated and described. The habits of the species of *Bucculatrix* are very similar to those of the *Nepticulæ*, but the larvæ differ in one or two remarkable particulars: the larvæ of *Bucculatrix* possess the six true legs on the thoracic segments, whilst those of *Nepticula* are destitute of these; and while the latter remain within the mine until they are full-grown, and then go down into the ground to undergo their change into the pupa state, the larvæ of *Bucculatrix* quit the mine when nearly mature, and, after moulting, become external feeders. The larva, whilst engaged in its mining operations, is smooth, but its skin becomes rough after quitting the mine; and, in order to undergo its moult comfortably on first venturing into the open air, it spins a flat silken covering, to which Mr. Stainton gives the name of a *cocoonet*, beneath which the larva lies in a doubled position. When full-fed, the larva goes down to the stem of the plant on which it has been feeding, or even to the ground or the leaves of herbage, where it spins a curious ribbed cocoon in some convenient corner, and there undergoes its further changes.

The fourth and fifth volumes are devoted to the history of forty-eight Moths of the extensive genus *Coleophora*, which includes, according to Mr. Stainton, no less than 126 described species, all natives of Europe. The larvæ of these Moths feed upon plants belonging to a great number of natural orders, but chiefly Dicotyledonous, only one being found upon a Coniferous plant (the Larch), and five upon different species of rushes and grasses. The larvæ, while young, mine the leaves of the plants on which they feed, or dwell in the interior of their seeds; but, after the lapse of a short time, they emerge from this concealment, and form a small case, sometimes of silk, but usually of fragments of the leaves of plants, within which they conceal their soft bodies, only protruding the head and anterior segments for the purpose of walking about and feeding. The name of the genus refers to this habit of the larva, of dwelling in a sheath-like case; and many of these habitations are very singular in their appearance. When the case becomes too small, the larva makes itself a new one, generally by mining out the parenchyma of a leaf, and uniting the free edges of the membranes with silk. The change

to the pupa state also takes place within the case, and the pupa lies concealed therein until the perfect insect is ready to emerge.

The subject-matter of the sixth volume is furnished by the extensive genus *Depressaria*, which includes eighty described species, mostly natives of Europe. Of these the transformations of fifty-two are known, and the volume under consideration gives the natural history of twenty-four, or nearly half the known species. Their food-plants belong chiefly to the natural orders Umbelliferae and Compositae, which nourish no fewer than forty out of the fifty-two species. The larvæ usually feed upon the leaves of plants, the edges of which they turn down so as to form a sort of tubular habitation; but some dwell amongst the umbels of the Umbelliferae, and often draw together the peduncles of the flowers with silken threads so as greatly to distort the growth of the plant. The perfect insects, which are amongst the largest and least brilliant of our Tineina, are produced at the end of the summer or in the autumn, and most of them hybernate in the perfect state, concealing themselves in the quiet corners of out-houses and sheltered palings, or creeping up amongst the straws of thatch.

In noticing the first volume of this book, we calculated that, for the British Tineina alone, the natural history of all the species could not be given in less than twenty-five volumes, the production of which cannot be looked upon otherwise than as an undertaking requiring a considerable amount of courage. Mr. Stainton, however, goes boldly forward, undeterred even by the rapid increase in the number of known species of the great group to the elucidation of which he has devoted himself with so much zeal, although, if matters go on as they have lately been doing, he may look forward to requiring forty or fifty volumes for the due illustration of his subject. From his "further observations on the genus *Nepticula*," contained in the newly published seventh volume, it appears that this genus, of which only 33 species were known at the time of the publication of the first volume (in 1855), now numbers at least 74 well-established species; and although this is doubtless an extreme case, still the great attention which has of late been paid, both in this country and on the Continent, to the Microlepidoptera, has certainly added many species to other genera. In the face of such a rapid increase still going on, it is almost too much to hope for the continuance of the life and energies of any one man long enough to allow him to bring together the whole mass of progressive observations on the natural history of this interesting group of Moths, in the comprehensive manner displayed in the work before us; but our author may have at least this consolation, that the design of his work is so good and so well carried out, that, let him stop where he will, it must always be a most valuable contribution to entomological literature, and a worthy monument of his zeal for the advancement of his favourite science.